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Modeling School Mathematics Teaching in Initial Teacher Training Colleges for Multilingual Classrooms*

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In this article, the author presents a discussion of how mathematics teacher educators model school mathematics teaching in initial teacher training colleges, as they prepare the student teachers to teach mathematics in multilingual classrooms in Malawi. In particular, the article examines the instructional practices that mathematics teacher educators produce, as they train student teachers who are going to teach mathematics in multilingual classroom. The study subjects were four mathematics teacher educators from two different initial teacher training colleges in Malawi. The research instruments included classroom observations, pre-observation and reflective interviews and focus group discussions. Data were collected during their residential sessions in January and February, 2007. Using three levels of critical discourse analysis (Fairclough, 1989; 2003), the research findings indicate that the mathematics teacher educators demonstrated the procedural discourse in all their instructional practices produced in their college mathematics classrooms. Furthermore, the results showed that some of the discourse practices being displayed in a college mathematics classroom mutually reinforce the discourses that the mathematics teacher educators display for school mathematics teaching in a multilingual mathematics classroom. The study recommends that to assist the student teachers, a certain action needs to be taken by the mathematics teacher educators.

Keywords: mathematics teacher educators, model, initial teacher training colleges, multilingual classrooms, critical discourse analysis, procedural discourse, instructional practices

Introduction

This article draws from the large study by Chitera (2009), in which she investigated the discourse practices that mathematics teacher educators' display in a college mathematics classrooms, as they train the student teachers. The author reports the discourse practices for school mathematics teaching displayed in a college mathematics classroom.

Chitera (2009) found that there were three common discourse practices that were displayed in a college mathematics classroom which are IRE (initiate-response-feedback) (Pimm, 1987), traditional lecturing and group discussions. She also indicated that the IRE and traditional lecturing discourse practices went together with directive discourses for procedural control. Furthermore, she demonstrated that the procedural discourse

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was the prevalent discourse in all the discourse practices produced in a college mathematics classroom. The question in this article is: What discourse for school mathematics teaching gets produced in a college mathematics classroom?

Related Literature Review

In multilingual mathematics classrooms, it was seen that the use of the IRE (Pimm, 1987) discourse practice is common. This type of communication tends to be strictly controlled. As Pimm (1987) explained, one of the difficulties with the teaching and learning of mathematics is the emphasis on a quiet, controlled and individual atmosphere as being appropriate. He further argued that the most familiar situation in a mathematics classroom is that of a teacher initiated question and the response is then evaluated. Colleman (1996) reported that, in the classroom in Brunei where he conducted his study, it was observed that the class was the orchestration of choral responses (p. 17), of which he referred to this as the "completion chorus phenomenon". Prophet and Rowell (1993, p. 204) in their study also reported that this phenomenon was common in a junior secondary school in Botswana. They referred to this strategy as "the most commonly used question and answer technique".

Investigating secondary school mathematics teaching strategies in Lesotho, Polaki (1996) reported how the teachers' strong desire to attain high pass rates in the public examinations led teachers to adopt the largely teacher-centered strategies, such as teach, give an example, and then learners do the exercise, question-and-answer, exposition, consolidation and practice. Primary school teachers in Lesotho were also reported to have a preference for "teach-example-exercise", as it was believed to be very effective in preparing learners for the examination (Polaki, 1996). In such situations, mathematics teaching and learning are viewed as processes involving nothing more than the attainment of correct answers by using correct procedures. Writing about mathematics elementary classrooms in which the LoLT (language of learning and teaching) was the mother tongue, Burton (1992) echoed the same observation. She observed that lessons are more often characterized by teacher presentations and independent silent work than group discussion.

Krashen (1982) and Long (1983) reported that, even though classroom discussions were being observed in their study, the effectiveness of those classroom discussions was doubtful, because it was the teacher who initiated what is to be discussed, decided who must provide a response, which the teacher either commends or condemns and when to put an end to the discussion. According to Sinclair and Coulthard (1975), such classroom talk is characterized by a predictable sequence, which they call the IRF sequence. As Le Roux (1996) noted, the IRF framework which is very common in many less affluent African classrooms, places the learner in a responding role. The learners' opportunities for participating productively in the classroom in a multilingual classroom are very limited and constrained.

Apart from the IRE pattern in multilingual classrooms, it was also observed that this IRE goes together with the procedural discourse. Procedural discourse is where the emphasis in teaching mathematics is aimed at establishing the steps that should be taken to solve a problem with little or no development of concepts. Khisty (1993) observed a pattern of discourse in a bilingual classroom, which she characterized as being procedural. This discourse introduces a learner to traditionally accepted procedures. Even though doing mathematics requires some knowledge of algorithms, it also requires a good deal of conceptual understanding in order to know why and how the steps should be undertaken. When the emphasis is on following procedures, much of what the teachers say is in the form of directions that learners have to memorize.

More relevant to this paper is that this literature makes explicit claims as to what is considered as the most common teacher-pupil talk in a multilingual mathematics classroom. It shows the heavy reliance upon the IRE pattern of interaction. The assumption in this article is that classrooms need to be placed at the position where teachers assist learners to perform in many different ways using tools of different kinds, but particularly discourse. The traditional and easily recognized classroom discourse of the IRE variety tells a story in which children are constrained socially, cognitively and linguistically.

At this particular point one wonders where do these practices come from. Is it from the teachers' school experience or teacher training colleges or somewhere else? The assumption might be a combination of different experiences in the life time of the teachers themselves. So, even though we cannot say that these are coming from teacher training colleges, it is still important to investigate what discourse practices for school mathematics teaching gets displayed in a college mathematics classroom.

Research Questions

The following research questions are addressed in this paper:

(1) What discourses for school mathematics teaching gets produced in a college mathematics classroom?

(2) What are the roles of mathematics teachers displayed in a college mathematics classroom?

The Study

The sample in this study included two teacher training colleges in Malawi, one from the central region and the other from the southern region, both of which are multilingual colleges. Four mathematics teacher educators, two from each college, were selected purposefully (Patton, 1990) based on the following criteria: Each mathematics teacher educator had to have tertiary mathematics qualification to ensure that they have at least a high level qualification. Each teacher had to have at least three years of teaching experience at college level, and therefore, was well experienced, which ruled out the possibility that their language practices might be due to lack of teaching experience. They were also selected on the basis of their willingness to participate in the study.

The four mathematics teacher educators to be presented here come from different regions and have different home languages. Mrs. Joshua[1] and Mr. Lukhere come from the northern region of Malawi and Chitumbuka is their home language. Apart from Chitumbuka, these teacher educators can speak Chichewa (since it is a national language) and English as the official language. Both of them were teaching at Kachere TTC (Teachers Training College) in the Southern region of Malawi. In their classes, there were four major languages: Sena, Lomwe, Chichewa and Yao. These classes had very few students who could speak the teacher educators' home language, Chitumbuka.

The other two teacher educators, Mr. Otani and Mr. Chipasula come from the central region and they both speak Chichewa as their home languages. The other language that they can speak is English as the official language. These two were teaching at Chayamba TTC located in the central region of Malawi. In their classes, there were two major languages: Chichewa and Chitumbuka. However, both of these mathematics teacher educators neither understand nor speak Chitumbuka.

Research Methods

Qualitative methods were used to uncover the ways in which mathematics teacher educators in teacher

[1] All the names of the participants and the colleges used in this article are pseudonyms.

training colleges display the discourse for school mathematics teaching in a college mathematics classroom. The research methods employed in this study included: pre-observation interviews with each mathematics teacher educator separately; up to five hours of mathematics lesson observation of up to five consecutive lessons in one of each mathematics educator's classes; reflective interview with each mathematics teacher educator on the classes observed. These interviews depended on the lessons observed and were facilitated by showing the mathematics teacher educators selected video recordings of their lessons. Mathematics teacher educators' focus group discussions were conducted two weeks after the lesson observations with all the teachers involved per college. All the interviews were tape recorded and the classroom observations were video recorded.

Findings

A Procedural Discourse for School Mathematics Teaching

In the data analyzed, the emphasis of the mathematics teacher educators was that student teachers should know the procedures for solving a particular mathematical problem in order to teach well school mathematics. For example, extract 1 illustrates this point. In this particular extract, Mr. Chipasula was telling his student teachers to discuss how to multiply two decimal numbers in their groups and then come up with a general procedure for multiplying decimals for school mathematics teaching. Immediately, student teachers began formulating the procedures in their groups.

Extract 1.

> Mr. Chipasula: So, since we are talking of decimals and place value of decimal numbers, necessary now with this knowledge, how can we teach multiplication for the first time, so in your discussions please include rules which we follow when multiplying decimal numbers, use the following example (writing the example on the board, 6.9×0.005), six point nine times zero point zero, zero five, discuss steps of procedure to be followed to come up with a correct answer so those procedure will give you some general rules, let us have five minutes.
>
> Ss: (students discussing in their groups).

In extract 1, Mr. Chipasula gave the student teachers an opportunity for group discussions in the class. It was also observed that Mr. Chipasula explained to the student teachers what they were expected to discuss in their groups, that is, to come up with a procedure for multiplying decimal numbers. The group discussions in a college mathematics classroom focused on developing the procedure for school mathematics teaching. As it will be shown later, the procedure to be developed here is what the student teachers will need to use when they begin to teach.

Mr. Chipasula, also, when giving instructions to the student teachers for the group discussions, used both direct and polite imperatives, such as "Please include rules which we follow", "Use the following example" and "Discuss steps of procedure to be followed". By the use of these directives, Mr. Chipasula emphasized on the "rules/procedure/steps" that student teachers will use when teaching mathematics in schools. The use of these imperatives reveals that, what he is saying is rather a command that needs to be obeyed. Even though the student teachers were allowed to discuss in their groups, it was noted that the discussions were about finding the rules or procedure that could be used for teaching multiplication of decimal numbers in schools. The mathematics teacher educator positioned himself as a facilitator displaying the procedure discourse for school mathematics teaching that school mathematics teaching is about teaching procedures.

A similar pattern was repeated in extract 2, where Mr. Chipasula announced to the student teachers that, in their groups, they should discuss the rules and procedures for division of decimal numbers from the given example.

Extract 2.

> Mr. Chipasula: Here is an example of division of decimals, eight point one nine divide by zero point nine, use this example to come up with general rules or major steps to be used when teaching division, division of decimals, use this example so as you are solving it generate some rules or point out some main steps what you emphasize when you are teaching division of decimal, so choose one member to write for the group, who is writing here, this one, so the rest would…
>
> Ss: (discussing while the mathematics teacher educators moves around checking what students are discussing).

The main activity in this part of the lesson is for the student teachers in their groups to generate "rules" or "main steps" to be followed when doing division of decimal numbers. Again here, Mr. Chipasula facilitated the discussions that focus on the procedures for school mathematics teaching. It seemed that he was of the view that suggested (school) mathematics teaching as consisting mainly of the teacher transferring facts, rules and mathematical truths to the school learners, who are viewed as passive recipients of knowledge (Ernest, 1991). The teachers in this case are positioned as experts over passive school learners. The discourse of Mr. Chipasula, therefore, restricts the student teachers to a procedural discourse for a school mathematics teaching.

In this extract, this structure is also seen to go with the use of direct imperatives, for example, he used sentences, such as "Use this example to come up with general rules...", "Use this example...generates some rules…" and "Choose one to write…". These directives define the focus and direction of the discussion. The use of these directives also reflects that the group discussions are controlled. So, even though Mr. Chipasula positioned himself as a facilitator in his class and gave the student teachers the opportunity for discussions, he still controlled the type of discourse to be focused on. The direct imperatives in this case reflect the control that the mathematics teacher educator has over the discourse to be focused on in the discussion.

Another example is seen in Mrs. Joshua's class where student teachers were discussing the division process of two numbers in their groups. In extracts 3 and 4, the author gives two examples from Mrs Joshua's class.

Extract 3.

> Mrs. Joshua: From seven over six, we are going to divide ah denominator into the numerator and write what you begin with, can we do that in groups?
>
> Ss: (students doing the division in their groups).
>
> Mrs. Joshua: I hope you are through.

Extract 4.

> Mrs. Joshua: Now, in our groups consider (writing on the board), consider the number two, four over five, okay, let us show two, four over five, ok let's come up with a number line, and on that number line, let us show two four over!
>
> Ss: (Students discussing in their groups).
>
> Mrs. Joshua: Come up with a number line, and on that number line show two over!
>
> Ss: (students discussing while the mathematics teacher educators move around the groups).
>
> Mrs. Joshua: Are you through?

Ss: (some say yes, some no).

The main activity in extract 3 is about student teachers' discussing in their groups the division process of two numbers. Similarly, in the second extract 4, student teachers were supposed to locate the number four over five on a number line. In both cases, student teachers engaged in mathematical procedure in their groups. The discourse involves mathematical process when solving a problem and not necessarily on reasoning questions. Student teachers learn to seek out efficient mathematical procedures in order to find a correct answer rather than a critique on their own and others' ideas. In this way, student teachers are prepared to perform only a mathematical procedure without justification on why they have used that particular procedure for a given problem.

The author followed up with Mr. Chipasula on why he focuses much on formulating the procedures as a discourse for school mathematics teaching. Mr. Chipasula said this in response will be illustrated in extract 5.

Extract 5.

Mr. Chipasula: Umh the aim is, I think since they will be teaching the primary school, so sometimes we, I give them procedure or I want to check do they really know if I am using the, if I am asking them questions. Do they know this one? Because I believe that if they know how to solve it they can easily teach, I would check do they know these steps what about this one, what about this one so if I am convinced that they know all these steps, I am sure that they can easily teach.

From this extract, Mr. Chipasula's procedural discourses for school mathematics teaching seem to be planned well in advance. In other words, to Mr. Chipasula, if the student teachers know the procedure of how to get to the correct answer, then the student teachers will be able to teach that particular area. Thus, even though he preferred group discussions in his class and positioned himself as a facilitator, he advocated using procedures for school mathematics teaching that position school learners as passive recipients. In this case, the discourse of facilitation in a college mathematics classroom goes together with the discourse of procedures for school mathematics teaching.

This argument was also confirmed by the following extract, where Mr. Chipasula was telling the student teachers that:

Extract 6.

Mr. Chipasula: If a learner is able to follow these steps, these rules, these are just some of the rules, then that learner can get correct answer, questions…

Mr. Chipasula also confirmed to the author that what he told his student teachers was what was expected of them. If the student teachers do something other than what they were told in his class, then it is wrong;

Extract 7.

Mr. Chipasula: Sometimes yah, when we are teaching the methodology of how to do the actual teaching in primary school, we want them, to at least follow what we are doing here and demonstrating to them, that is why there was an issue of dressing the room, (laughing), so that they know what teaching materials are needed for example like in our case we used place value box so we want them to also produce that place value box when teaching in their various schools;

Extract 8.

Mr. Chipasula: With the MITTEP (Malawi Integrated In-service Teacher Education Programme) group, because they were starting with an orientation of two weeks and they go into schools to teach, so they paired with the head teacher give them or share their experiences with them, and when they come back here it was difficult to switch the normal which was not correct, lets do it in this way and sometimes we can see that they have changed but when we send them back they switch back to there, but with this group since we have not started them how they are doing, I don't know how they will fare.

In general, Mr. Chipasula was positioned as both a facilitator and a director in relation to his student teachers. However, his discourse positions the mathematics teacher as the primary knower (Pimm, 1987), who is supposed to impart knowledge to the school learners.

The Role of a Mathematics Teacher Is "to Tell"

In most of the lessons observed that language produced by the mathematics teachers was that mathematics teachers should "tell their learners" to do something. The following example illustrates this point. In extract 9, Mr. Lukhere presented his lesson as student teachers listened, watched and took notes. Mr. Lukhere used charts to enable him to explain the process of modeling and at the same time, enabling the student teachers to see clearly how to add the fractions that have the same denominators. Mr. Lukhere read aloud the steps involved from the chart and expanded more where he deemed necessary to do so.

Extract 9.

Mr. Lukhere: (Hanging a chart on top of the chalkboard). Okay, addition of proper fractions whose denominators are the same, addition of proper fractions whose denominators are the same, (reading from the char) consider the following addition problem that is, one plus, one over five plus three over five (reading from the chart), model the addition process as follows, that is to say when we are trying to teach addition of fractions, we normally start with simpler things which pupils can appreciate, that is, they can easily see, that is why there is need for us to model the addition of these fractions and to do that we are going to use a rectangle with eh some subdivisions, and for this sum of one over five plus three over five, first of all there is need for us to model the addition process as follows, draw a rectangle as I have done this one (pointing to the rectangle), it has to be a rectangle or a circle, divide that rectangle into ah five equal parts as shown below, by dividing this rectangle into five equal parts, because of the denominator that we are using in this addition then model the fractions one fifth and three fifth, how have we modeled the fractions in this case, I have modeled one fifth by shading this different from ah three fifth which is these three parts and then out of the five parts, one part has been modeled as one fifth, which is this one, three parts has been modeled which represent that fraction (pointing to three fifth) and then when we add the total number of parts which have been shaded we end up with one, two, three, four out of how many parts!

Ss: Five.

Mr. Lukhere: Five, so that's the way we can model the addition of fractions whose denominators are the same.

In extract 9, Mr. Lukhere demonstrated and explained, using an example how to model the addition of fractions that have the same denominator. It is seen from this extract that there were no interruptions as the mathematics teacher educator was demonstrating. The student teachers were seen to listen, watch and take notes quietly. Thus, Mr. Lukhere reflected a traditional lecture discourse practice in his classroom.

Mr. Lukhere also through his language indicates that there is a traditional type of discourse for school mathematics teaching. Mr. Lukhere noted, for example, that as mathematics teachers "…when we are trying to teach addition of fractions, we normally start with simpler things which pupils can appreciate, that is, they can easily see that is why there is need for us to model the addition of these fractions". There is a sense in which these words reflect a traditional type of discourse to mathematics teaching practice, namely, a discourse which is established and inflexible as a way of teaching mathematics in that one usage of "We normally start with".

In this discourse practice, Mr. Lukhere used direct imperatives, such as "Model the addition process as follows...", "Draw a rectangle as I have done this one..." , "It has to be a rectangle or a circle", "Divide into five equal parts as shown below" and "That is the way we can model". These are phrases which assume unquestioning student teacher compliance with the steps of how to teach mathematics. His use of "we" indicates the voice of authority. Then, he concluded his presentation with another statement that says "That is

the way we can...". The extract, therefore, reflects the professional as expert perspective embedded (Fairclough, 1995, p. 15) in the discursive practices of the mathematics teaching.

Mr. Lukhere was also observed to display the directive discourse for school mathematics teaching in the following example.

Extract 10.

Mr. Lukhere: So, one that is supposed to tell the pupil is just added the numerators eh.

Ss: Yes.

Mr. Lukhere: And maintain the.

Mr. Lukhere and Ss: Denominator.

Mr. Lukhere: So this is going to be equal to one plus.

Ss: Three.

Mr. Lukhere: Over.

Ss: Five.

Mr. Lukhere: Not necessarily making divisions, so this is four over.

Mr. Lukhere and Ss: Five.

Mr. Lukhere: Just add the numerators, while maintaining the.

Mr. Lukhere and Ss: Denominators.

Mr. Lukhere: That is addition of proper fractions whose denominators are the same. That is what you are supposed to tell your learners…

In extract 10, Mr. Lukhere said "One is supposed to tell the pupil", and he concluded with the same statement saying, "That is what you are supposed to tell your learners". Explicitly, he represented teachers as the ones having all the responsibility for everything that happens in the classroom. Through that use of the word "tell", Mr. Lukhere revealed the role of the teachers in a mathematics classroom which is to "tell". It seems to give the impression that every learner's action, every bit of the learner's learning, every aspect of classroom activity would be under the teacher's control, so that the teacher would be accountable for every outcome. This is the directive discourse that he displayed to his student teachers for school mathematics teaching. In this case, the result is that the mathematics teacher educator and student teachers are affirmed and (re)constituted as such, even as the practices in which they participate disenfranchise some of the participants and sometimes themselves.

Likewise, Mr. Chpasula also did the same thing as illustrated in extract 11.

Extract 11.

Mr. Chipasula: (Rubbing), so I think it is just better to tell our learners that first of all we ignore the points, we take these as whole numbers, so this step will give you sixty nine times five (writing) (he tells the first step), so what should be the second step, multiply just like this one, they say forget the decimal places, then multiply the numbers, so we are treating these as whole numbers and in the prerequisite knowledge, we mentioned multiplication of whole numbers, so they know how to multiply, if we multiply sixty nine by five what do we get, you multiplied in your groups.

The emphasis in this extract is that the student teachers should tell their learners what to do, direct the steps to be followed, and school learners are expected to follow the teachers' instructions. All these words indicate the role of the mathematics teacher, where he/she is directing and controlling the whole process while retaining the passiveness of the learners. Thus, he models the student teacher discourses into the directive discourse that is required for mathematics teaching, in a way drawing the student teachers into the discourse of school mathematics teaching. This may suggest that, though not explicitly, the directive discourse in mathematics teaching is an established discourse that Mr. Chipasula wanted his student teachers to be absorbed in.

The author followed up with Mr. Otani to find out why he did his teaching in this way during the reflective interviews. The following four extracts indicate what Mr. Otani said.

Extract 12.

> Mr. Otani: OK, the aim was first to impart knowledge of how they can conduct the lesson in classrooms, after that it's when we come to the part where you can allow them to express themselves or to teach as they have been taught.

Extract 13.

> Mr. Otani: Yah, the aim is to take everyone in that class so that they should, they should learn how they could go about teaching that lesson… they should observe and do the same.

Minutes later.

Extract 14.

> Mr. Otani: But the main aim is, we are doing this because of two things the one at the end, they have to write exams and they cannot do well, if they do not do what we did in the lesson ah, secondly they should apply this knowledge wherever they will go.

Mr. Otani's words indicated that what they are doing is the right thing and student teachers have to follow that if they want to do well both during examinations and when they go for the actual teaching. The focus seems to be driven by the examination oriented syllabus and the curriculum. Furthermore, he indicated that if he does not do what he does in his classroom, the student teachers will have difficulties to have a picture of what is going on.

Extract 15.

> Mr. Otani: Ummhu, it is difficult for them to have a clear picture of what is going on.

The emphasis in this case is that student teachers are then expected to do, as they have been taught. In other words, they will need to demonstrate the directive discourse as they have been taught. Thus, the mathematics teacher educator's practices promote and preserve the directive discourse and procedural discourse for school mathematics teaching and wish to pass these on to the student teachers. They reflect the ideological position of teachers as directors and experts over passive learners.

Summary and Conclusions

Comparing the findings in this article against the existing literature as discussed above and the practices of various discursive events that take place in multilingual school mathematics classroom, the results suggest that the discourse practices for school mathematics teaching produced in a college mathematics classroom reinforces the discourse practices (but not all) that are produced in a school mathematics classroom. It cannot

be assumed that it was the mathematics teacher educators' intention, however, to produce such types of discourses. However, the discourses being produced for school mathematics teaching across these four mathematics teacher educators mirror the conventional discourses that are enacted in primary/secondary multilingual mathematics classrooms.

The discourses focus on conventional practices, meaning that the act of production has centered on the mathematics teacher educators being professionals and experts over passive learners. The discourse also centers on reinforcing that school mathematics teaching is about rules and following procedures. For example, this practice happens when the mathematics teacher educators explain to the student teachers that mathematics teaching involves calculations only. In this case, the procedural discourse for school mathematics teaching is being reinforced on the student teachers.

Earlier on in this paper, the author pointed out from the literature some of the strategies that mathematics teachers employ in multilingual mathematics classrooms. One of the strategies that teachers in most multilingual mathematics classrooms, where the LoLT is different from the home languages of the learners produce is mostly the IRE pattern of discourse that goes together with the procedural discourse. The author gave examples of studies conducted by Krashen (1982), Le Roux (1996) and Long (1983) indicating that the IRE pattern of discourse is a common phenomenon in multilingual mathematics classrooms.

Emphasis on the procedural way of teaching mathematics in a college mathematics classroom highlights the fact that student teachers are not exposed to other discourse practices in teaching mathematics. Dufficy (2001) argued that different discourse practices encourage learners to construct joint understandings of the world. Similarly, research on effective instruction for learners whose main language is not the LoLT emphasizes the importance of using a variety of methods (discourses) tailored to learners' needs (August & Pease-Alvarez, 1996). They continue to explain that instructional methods (discourses) selected depend on the level(s) of English language proficiency and available resources among other factors. Using multiple approaches (discourses), Reyhner and Davison (1993) and August and Pease-Alvarez (1996) argued that teachers can meet the needs of a wider variety of learners. This is indeed a challenge for mathematics teacher educators.

Conclusions

This article reveals that the discourse practices for school mathematics teaching that have emerged as the mathematics teacher educators prepare the student teachers are embedded in conventional practices of multilingual classrooms. Also considering the discourses being displayed in a college mathematics classroom, the way in which mathematics is taught reflects the traditional focus on acquisition of facts, mastery of procedures and technical skills. The question that arises here is whether the discourse practices reflected in the multilingual school mathematics classroom is the reproduction of what the teachers are exposed to teacher education programmes. Although this might be difficult to answer now, the findings here show a match in these discourse practices and so it might be possible to argue that partly, the discourse practices displayed in multilingual classrooms might come from the college mathematics classroom.

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